CLAIMS

1. A method of forming a polarizing material comprising the steps of:

   (a) forming a layer of a dichroic material on a substrate, and

   (b) exposing said layer to activating light illumination to provide an ordered structure with a distinguished absorption axis.

2. A method as claimed in claim 1 further comprising polymerising said layer.

3. A method as claimed in claim 1 wherein different regions are polarized by activating radiation with different polarization axes so as to produce regions of said polarizing material with differing axes of polarization.

4. A method as claimed in claim 3 wherein regions of said layer are exposed independently by the use of masks to isolate selected regions for exposure.

5. A method as claimed in claim 3 wherein a birefringence mask is used to create activating radiation with a selected spatial distribution of polarization vectors.

6. A method as claimed in claim 1 wherein said layer is provided with a coating to change its spectral response.

7. A method as claimed in claim 6 wherein different regions of said layer are formed with different coatings to produce a multi-color polarizing material.

8. A method as claimed in claim 1 comprising forming a plurality of said layers on said substrate with said layers being separated by isolation layers.

9. A method as claimed in claim 1 wherein said activating radiation is polarized or non-polarized, but directed.

10. A method as claimed in claim 1 wherein said activating radiation is a continuous waveform or is pulsed.

11. A method as claimed in claim 1 wherein the polarization of the dichroic layer is controlled by varying parameters selected from the group consisting of the incident angle of the activating radiation, the exposure energy density and the process temperature.

12. A method as claimed in claim 1 wherein the dichroic layer is formed on the substrate by a method selected from the group consisting of spin-coating, dipping, spraying, brushing, printing, Langmuir-Blodgett technique or thermal evaporation.

13. A polarizing material comprising a layer of a photochemically stable dichroic absorber.

14. A material as claimed in claim 13 wherein said absorber is formed within a polymer matrix.

15. A polarizing material as claimed in claim 13 wherein said dichroic absorber is selected from the group consisting of: mono-, bis-, tris-, and poly-azo dyes, quinone dyes, mono- and poly-oxyanthraquinone dyes, sulfur-substituted hydroxythio-anthraquinone dyes, aminohydroxy-anthraquinone dyes, anthrapyrimidinone dyes, merocyane dyes, azomethine dyes, polycyclic compounds, benzoquinones, napthoquinones, tolanes, diphenyls, p-nitroanilines, p-nitrosodialkylanilines, dialkylaminostyroles.

16. A polarizing material as claimed in claim 14 wherein the polymer matrix is formed of polymeric materials selected from the group consisting of: polyimide, polyethylene, cellulose acetate, polystyrene, polycarbonate, polyester, polyacrylonitrile, polyacetal, polyacrylamide, polybutadiene, polyvinylalcohol, polymethylmethacrylate, and polyvinylcinnamate.

17. A polarizing material as claimed in claim 13 wherein the polarizing material is provided with a coating of a material selected to alter the spectral response of said material.

18. A polarizing material as claimed in claim 17 wherein the selected material is iodine.